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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/800,305

03/13/2004

Zhen Liu

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EXAMINER

MATTIS, JASON E

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

10/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/800,305

Applicant(s)

LIU ET AL.

Examiner

Jason E. Mattis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1 paper</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 5/14/04 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. No corresponding copies have been provided for any of the cited non-patent literature.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. These claims are directed to a method and computer readable medium containing code to execute a method; however, the method consists solely of a manipulation of data without a tangible and useful result. To be a statutory process claim, the claim must either have independent physical acts or be limited to a practical application by producing a concrete, tangible and useful result. The preambles of both independent claims 1 and 16 state that the method is for constructing an overlay

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multicast tree to deliver data from a source to an identified group of nodes; however, there is no step in either claim that reaches this result. It is recommended that a step of "using the created tree as a multicast tree by delivering data from a source to an identified group of nodes based on the multicast tree" be added to claims 1 and 16, such that the claims are statutory. In anticipation of the claims being amended such that they are statutory, they will be included in the rejections under prior art below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lamping et al. (U.S. Pat. 5619632) in view of the Shi et al. paper titled "Routing in Overlay Multicast Networks" (as cited in the Applicant's IDS).

With respect to claims 1 and 16, Lamping et al. discloses a computer readable medium containing a computer executable code that causes a computer to perform a method (See column 16 lines 1-36 and Figure 5 of Lamping et al. for reference to a CPU 202 executing a program stored in a computer readable medium to perform a method). Lamping et al. also discloses identifying a plurality of nodes and mapping the nodes into multidimensional space (See column 17 lines 19-43 and Figure 6 of

Lamping et al. for reference to obtaining data on nodes and mapping the nodes to a layout space, which is a two-dimensional plane). Lamping et al. further discloses constructing a geometric region comprising a size that is the minimum size necessary to contain the source and all the nodes **(See column 11 lines 18-42, column 13 lines 50-65 and Figure 2 of Lamping et al. for reference to defining a convex hull that is a minimum size containing all the nodes).** Lamping et al. also discloses creating a tree beginning at the source and including all of the nodes within the geometric region **(See column 24 lines 42-65 and Figure 14-21 of Lamping et al. for reference to creating a tree beginning at a source node and including all the nodes in the convex hull).** Lamping et al. does not specifically disclose that the tree is an overlay multicast tree.

With respect to claims 1 and 16, Shi et al., in the field of communications, discloses using a geometric mapping of nodes to create a tree that is an overlay multicast tree **(See the abstract, Section IV A. titled "Simulation Setup", and Figure 3 of Shi et al. for reference to using a geometric mapping of nodes in an overlay network to create a multicast tree).** Using a geometric mapping of nodes to create a tree that is an overlay multicast tree has the advantage of allowing data to be efficiently multicast in an overlay network.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Shi et al., to combine using a geometric mapping of nodes to create a tree that is an overlay multicast tree, as suggested by Shi et al., with the system and method of Lamping et al., with the motivation being to allow data to be efficiently multicast in an overlay network.

With respect to claims 2 and 17, Lamping et al. discloses constructing a circular region (See column 20 lines 16-60 and Figure 9 of Lamping et al. for reference to defining the space by a circle).

With respect to claims 3 and 18, Lamping et al. discloses mapping the nodes into multidimensional Euclidean space (See column 17 lines 20-43 and Figure 6 of Lamping et al. for reference to mapping the nodes into a hyperbolic plane, which is a Euclidean space).

With respect to claims 4 and 19, Lamping et al. discloses creating a grid within the geometric region (See column 20 lines 16-60 and Figure 9 of Lamping et al. for reference to mapping the nodes to coordinates, which for a grid, within the hyperbolic plane).

5. Claims 15 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lamping et al. in view of Shi et al. and in further view of Alkalai et al. (U.S. Pat. 7020076 B1).

With respect to claims 15 and 30, the combination of Lamping et al. and Shi et al. does not disclose using an out-degree less than two for each node in the tree.

With respect to claims 15 and 30, Alkalai et al., in the field of communications, discloses using a out-degree less than two for each node in a tree (See column 14 lines 9-47 and Figures 6A-D of Alkalai et al. for reference to using a stack tree with each node being connected to at most three nodes with at most two being branch, or out, nodes). Using an out-degree less than two for each node in a tree has

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the advantage of simplifying the routing of data through the tree while making sure that available bandwidth is not overused in any node of the tree.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Alkalai et al., to combine using a out-degree less than two for each node in a tree, as suggested by Alkalai et al., with the system and method of Lamping et al. and Shi et al., with the motivation being to simplify the routing of data through the tree while making sure that available bandwidth is not overused in any node of the tree.

6. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alkalai et al. in view of Shi et al.

With respect to claim 31, Alkalai et al. discloses a network comprising source having an out-degree of no more than ten and a plurality of nodes in communication with the source with each node having an out-degree of no more than ten (**See column 14 lines 9-47 and Figures 6A-D of Alkalai et al. for reference to a network having using a stack tree having a source node and other nodes in communication with the source node with each node being connected to at most three nodes with at most two being branch, or out, nodes**). Alkalai et al. does not specifically disclose that the network is an overlay network.

With respect to claim 31, Shi et al. discloses using a geometric mapping of nodes to create a tree in an overlay network (**See the abstract, Section IV A. titled "Simulation Setup", and Figure 3 of Shi et al. for reference to using a geometric**

mapping of nodes in an overlay network to create a multicast tree). Using a geometric mapping of nodes to create a tree that is an overlay multicast tree has the advantage of allowing data to be efficiently multicast in an overlay network.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Shi et al., to combine using a geometric mapping of nodes to create a tree that is an overlay multicast tree, as suggested by Shi et al., with the system and method of Lamping et al., with the motivation being to allow data to be efficiently multicast in an overlay network.

With respect to claim 32, Alkalai et al. discloses the nodes each having an out-degree of no more than two **(See column 14 lines 9-47 and Figures 6A-D of Alkalai et al. for reference to a network having using a stack tree having a source node and other nodes in communication with the source node with each node being connected to at most three nodes with at most two being branch, or out, nodes).**

7. Claims 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alkalai et al. in view of Shi et al. and Lamping et al.

With respect to claim 33, the combination of Alkalai et al. and Shi et al. does not disclose mapping nodes into a geometric region in multidimensional space having a size that is the minimum size necessary to contain the source and all the nodes.

With respect to claim 34, the combination of Alkalai et al. and Shi et al. does not disclose that the multidimensional space is Euclidean space.

With respect to claim 35, the combination of Alkalai et al. and Shi et al. does not disclose that the region is a circle.

With respect to claims 33-35, Lamping et al. discloses mapping nodes into a circular geometric region in multidimensional Euclidean space having a size that is the minimum size necessary to contain the source and all the nodes (**See column 11 lines 18-42, column 13 lines 50-65, column 20 lines 16-60, and Figures 2 and 9 of Lamping et al. for reference to defining a convex hull that is a minimum size containing all the nodes and for reference to defining the space by a circle which is a multidimensional Euclidean space**). Mapping nodes into a circular geometric region in multidimensional Euclidean space having a size that is the minimum size necessary to contain the source and all the nodes has the advantage of allowing a tree to be efficiently formed.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Lamping et al., to combine mapping nodes into a circular geometric region in multidimensional Euclidean space having a size that is the minimum size necessary to contain the source and all the nodes, as suggested by Lamping et al., with the system and method of Alkalai et al. and Shi et al., with the motivation being to allow a tree to be efficiently formed.

With respect to claim 36, Alkalai et al. does not disclose that the region is a sphere.

With respect to claim 36, Shi et al. discloses using a region that is a sphere (**See the abstract, Section IV A. titled "Simulation Setup", and Figure 3 of Shi et al.**

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for reference to using a spherical geometric mapping of nodes in an overlay network to create a multicast tree). Using a region that is a sphere has the advantage of allowing data to be efficiently mapped into a multicast tree in an overlay network.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Shi et al., to combine using a region that is a sphere, as suggested by Shi et al., with the system and method of Alkalai et al., with the motivation being to allow data to be efficiently mapped into a multicast tree in an overlay network.

Allowable Subject Matter

8. Claims 5-14 and 20-29 would be allowable if amended to overcome the rejections under 35 U.S.C. 101, as shown above.

Conclusion

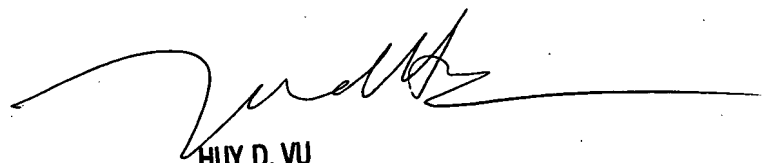
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason E. Mattis whose telephone number is (571) 272-3154. The examiner can normally be reached on M-F 8AM-5:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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